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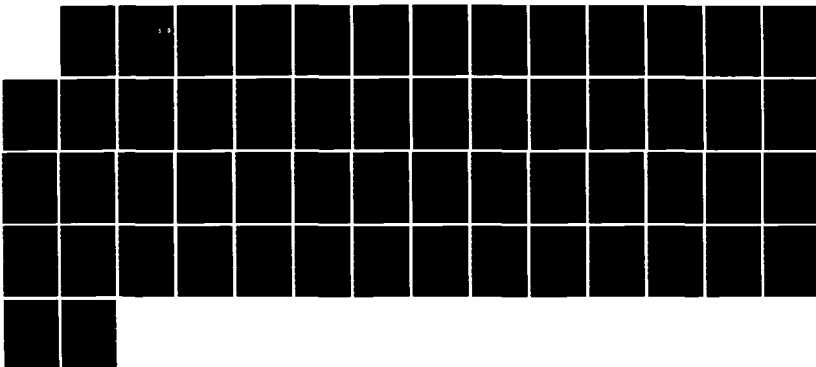
COMMAND AND CONTROL OF THE THIRD TIER OF MOBILITY
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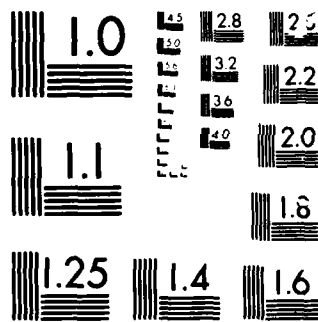
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Command and Control of the Third Tier
of Mobility, Combat Aviation

by

Major John M. Curran
Aviation

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School of Advanced Military Studies
U.S. Army Command and General Staff College
Fort Leavenworth, Kansas

2 December 1985

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REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE		5. MONITORING ORATION REPORT NUMBER(S)	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		6. MONITORING ORATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION School of Advanced Military Studies WAGSC	6b. OFFICE SYMBOL (If applicable) ATZL-SWV	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State, and ZIP Code) Fort Leavenworth, Kansas 66027-6900		7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT CESSION NO.
11. TITLE (Include Security Classification) COMMAND AND CONTROL OF THE THIRD TIER OF MOBILITY, COMBAT AVIATION			
12. PERSONAL AUTHOR(S) Curran, John Marcus, MAJ, US Army			
13a. TYPE OF REPORT Monograph	13b. TIME COVERED FROM	14. DATE OF REPORT (Year, Month, Day) 2 December 1985	15. PAGE COUNT 51
16. SUPPLEMENTARY NOTATION			
17. CUSAT CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	
			AirLand Battle Doctrine, Command and Control, Army Aviation Command and Control. <
19. ABSTRACT (Continue on reverse if necessary and identify by block number) This monograph explores the implications of AirLand Battle's concept of command and control for combat aviation at the tactical level. It proceeds by first defining AirLand Battle doctrine's concept of command and control. Next, it reviews the development of combat aviation as a mobile combat force and discusses its suitability for AirLand Battle. To gain historical insight into a command and control concept for mobile forces similar to AirLand Battle's, this monograph next examines the German concept of command and control called <u>auftragstaktik</u> and identifies the implications of <u>auftragstaktik</u> for mobile German forces in World War II. Finally, this monograph concludes its exploration by discussing changes in the battlefield environment since World War II which affect command and control today. (continued)			
20. DISTRIBUTION AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL MAJ John Marcus Curran		22b. TELEPHONE (Include Area Code) (616) 594-3415	22c. OFFICE SYMBOL ATZL-

BLOCK 19 (CONT)

- > This monograph concludes that the implications of AirLand Battle's concept of command and control for combat aviation are similar to the implications of auftragstaktik for German mechanized forces in World War II. It determines that the implications for combat aviation fall under the broad categories of training, organization, command, control, and communications. Each category is addressed and recommendations made for combat aviation to fully implement AirLand Battle's concept of command and control. For [unclear]:

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by

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2 December 1985

Approved for public release; distribution unlimited.

School of Advanced Military Studies
Monograph Approval

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Accepted this 31st day of December 1985.

Revision For	
S CRA&I	<input checked="" type="checkbox"/>
C TAB	<input type="checkbox"/>
Announced	<input type="checkbox"/>
Classification	

Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	



ABSTRACT

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INTRODUCTION

Combat aviation is the most mobile force on the battlefield. It possesses the capability to maneuver quickly and concentrate rapidly at the decisive point and time. Combat aviation's maneuverability permits its rapid employment in deep, close-in, and rear battles. Combat aviation also possesses substantial firepower capable of destroying tanks, armored vehicles, and infantry. Current employment techniques provide combat aviation with excellent survivability against small arms and artillery fires. Protective systems allow combat aviation to avoid threat air defenses. Given good leadership and effective control, combat aviation possesses dynamic combat power potential.¹

AirLand Battle doctrine embraces a new and different style of command and control for the US Army. It promotes initiative and independent action at the lowest level. This style is not new to modern warfare. Since the early 1800's auftragstaktik or mission tactics, have been practiced by the German Army and remain today as the basis of their command and control system. As will be demonstrated, AirLand Battle doctrine embraces this style of command and control.

The problem. This monograph explores the implications of AirLand Battle's concept of command and control for combat aviation at the tactical level. For the purposes of this monograph combat aviation is defined as attack, air cavalry, and assault helicopter organizations.

There are four reasons for exploring this subject. First, aviation's mobility will play a significant role in the execution of AirLand Battle. Second, command and control directly affects

the degree of agility aviation can exercise on the battlefield. Third, with the creation of the combat aviation brigade (CAB), the potential exists for the CAB to function as a maneuver headquarters of a task organized force. Given this potential, aviation officers must understand the AirLand Battle concept of command and control to employ other arms properly. Finally, since AirLand Battle's concept of command and control is new, it demands our exploration. The former Chief of Staff of the Army, General Edward Meyer challenged the Army to explore this issue when he wrote;

"The AirLand Battle is going to create a tremendous challenge with a need for greater decentralization and more mission-type orders. How do we best adapt to this mode of fighting?"²

Before discussing command and control, it is useful to define it. FC101-55, Corps and Division Command and Control, defines command and control as follows:

"Command is a process by which the will and intent of the commander is infused among subordinates. This process is directive; its premise is reliable subordinate behavior. Control is a process by which subordinate behavior inconsistent with the will and intent of the commander is identified and corrected. This process is regulatory; its premise is unreliable subordinate behavior."³

FC 101-55 further elaborates on the command and control system.

The system consists of three components: command and control organization (commander and staff), the command and control process, and command and control facilities (command posts and communications).⁴ Although other definitions exist for command and control, FC 101-55 is in line with AirLand Battle doctrine. This monograph will focus on the nature of command and control

rather than its system.

Methodology. To address the problem, this monograph will explore the following questions: What is AirLand Battle doctrine and its requirements for command and control? How has combat aviation developed and what are its current and future capabilities? To gain historical insight into a command and control concept similar to AirLand Battle, this monograph asks, How did German mechanized forces develop and how were they commanded and controlled? What has changed since then that affects their style of command and control? By answering these questions, we can determine the implications of AirLand Battle command and control for combat aviation.

AIRLAND BATTLE DOCTRINE

Doctrine defined. AirLand Battle doctrine is a new approach to fighting for the US Army. It focuses on initiative and aggressive action to defeat the enemy.⁵ It attempts to bring into balance the application of maneuver and firepower. AirLand Battle, in comparison to previous doctrine, emphasizes the offense. Its aim, however, is to bring offense and defense into balance.⁶ It re-introduces operational art between strategy and tactics in the structure of modern warfare. Operational art links tactics to strategy, thus clarifying the purpose of tactics within the broader goals of strategy. AirLand Battle doctrine seeks to maximize the increased mobility and firepower of today's forces without diminishing the decisive importance of the human dimension. AirLand Battle places leadership and the human⁷ dimension on equal footing with the physical aspects of warfare.

To clarify the relationship between physical aspects and the human dimension of warfare; maneuver, firepower, protection, and leadership are identified as the elements of combat power. Of these leadership is the most essential.

The tenets of AirLand Battle contain the essence of its doctrinal philosophy. They are initiative, depth, agility, and synchronization. Each merit some discussion.

"Initiative means setting or changing the terms of battle by action."⁸ It connotes the ability and willingness of subordinates to act with initiative within the commander's intent. In the defense, initiative implies seizing the initiative from the enemy by attacking his plan and causing him to lose control of the battle. In the offense it implies always setting the terms of the battle and never relinquishing the initiative to the defender. Initiative is maintained by attacking weak points in the enemy defenses, flexibly shifting the main effort, and rapidly transitioning to exploitation and pursuit. Initiative's goal is to throw the enemy off balance by rapidly disrupting his plan, then disorganizing his force, and ultimately bringing about his defeat.⁹

"Depth is the extension of operations in space, time and resources."¹⁰ It seeks to make room for maneuver, gain time to effect the commander's will, and gather strength to win. The tenet of depth accomplishes those goals by fighting the enemy throughout his depth in order to disrupt his plans, his force, and his freedom of action. It connotes a broad view of the enemy, not just a focus on his point of attack. Depth can be facilitated

by the commander through the maintenance and effective use of reserves or by striking the enemy in his rear.¹¹

Agility is the ability of friendly forces to act faster than the enemy in order to permit rapid concentration against enemy weakness. The tenet of agility encompasses both physical and mental agility.¹² Physical agility means possessing the equipment, organization, and control apparatus to facilitate acting faster than the enemy. Mental agility means out-thinking the enemy, maintaining your will over his in battle, and causing him to lose control. It implies a decision making process which functions faster than the enemy's.

"Synchronization is the process of arranging combat activities in time, space, and purpose to develop maximum combat power from the resources available to the commander."¹³

Synchronization includes three main concepts. First, it implies the use of every available asset at the decisive time and place in a coordinated fashion to effect the defeat of the enemy. Nothing should be wasted, nor any combat multiplier left unused. Second, synchronization implies the principle of economy of force, the minimizing of force on the periphery in order to concentrate at the decisive time and place. Finally, it implies the orchestrating of combat power to gain a synergistic effect greater than the sum of the individual parts.

These four tenets, initiative, depth, agility, and synchronization capture the essence of AirLand Battle doctrine. They also help to conceptualize the requirements for command and control of forces fighting under this doctrine. Next, let us discuss those requirements.

Requirements. AirLand Battle requires the seizure and maintenance of initiative. To do this, commanders must observe the battlefield and develop a vision of the goal to be obtained. Next commanders must clearly express their intent. Commanders must allow their subordinates the freedom to develop opportunities and to act upon them. Since subordinates have varying capabilities, the commander tailors his leadership style to the abilities of his subordinates.¹⁴ The commander provides his subordinates the tools to execute his will. This implies decentralizing authority to the lowest level.

Initiative also demands much from subordinates. Subordinates must understand the commander's vision of the battlefield and the assumptions on which it is based. Subordinates then must execute their missions with the commander's intent providing the framework for action. Initiative demands that subordinates be well trained in doctrine, tactics, drills, and techniques. Without proficient subordinates, commanders will not have the degree of certainty necessary to decentralize control. Finally, as the decision makers on the spot, junior leaders, require mental agility. They must quickly and accurately assess the situation and select a course of action which fits within the intent of the commander.

The tenet of depth requires the commander and his subordinates to widen their perspective beyond just the close in battle. The commander must look for opportunities to strike the enemy deep while simultaneously preparing for the enemy to do the same. By looking beyond the close in battle, the commander

prepares for the future by establishing reserves, sustaining the operation, and determining the enemy's next move. Depth requires plans which incorporate action throughout the depth of the battlefield. When the unexpected occurs, plans must be flexible enough to sustain operations. The tenet of depth requires a style of command and control which possesses a broad prospective of the battlefield.

Agility requires a flexible command and control system which promotes independent action. The authority to make decisions must be decentralized to the commander on the spot allowing for quick action. Control is minimized to allow subordinates freedom of action. The command and control system must be designed to maximize the agility of the forces.

Synchronization requires the orchestration of combat power. The commander decides how best to orchestrate his force's combat power. He must have sufficient control to concentrate forces at the decisive place and time and maximize combat power potential by applying it in a mutually supporting manner. The command and control system facilitates the commander's orchestration. It insures that combat assets are controlled to the extent necessary to coordinate their interaction. It insures that no asset is wasted or misused. Finally, it establishes control without sacrificing the advantages of agility and initiative.

Synchronization and agility place the command and control system in a dilemma. To synchronize, the command and control system must orchestrate combat power. This implies more control. Agility, on the other hand, requires a command and control

process which minimizes control allowing independent flexible response to opportunities. Both tenets are important to the execution of AirLand Battle. Therefore, the command and control process must attempt to strike a balance between the two.

Command and Control AirLand Battle command and control attempts to satisfy the requirements of initiative, depth, agility, and synchronization. It provides for maximum subordinate flexibility within the parameters of the commander's intent.¹⁵ Operation plans are the basis for action. Plans normally include the commander's intent, concept of the operation, and responsibilities of subordinates. Orders are mission type describing what to do, not how to do it. Control measures allow for the greatest possible flexibility. Clear communications and understanding of the commander's intentions are used to reduce the need for close control.¹⁶ Under AirLand Battle doctrine, the effectiveness of command and control is measured by the ability of the force to function faster than the enemy.¹⁷ Decentralized authority, leadership, initiative, and independent action are key ingredients in this style of command and control.

Now that we have reviewed AirLand Battle doctrine and its style of command and control we turn to combat aviation. Aviation brings a new dimension to the AirLand battlefield. What are the implications of this new dimension? That question will be the focus of the next section.

COMBAT AVIATION

To understand combat aviation, we should first review its historical development and application. This review will help us

identify its present capabilities and future potential.

Development. The beginning of army aviation can be traced to 6 June 1942. On that date a memorandum for the Commanding General, Army Ground Forces, established the first organic air observation units for field artillery. This memorandum marked the birth of today's army aviation.¹⁸ For the remainder of the decade the Army's interest in air employment focused on airborne and glider development.¹⁹ It is interesting to note that in 1950 the Armed Forces Board recommended that aviation assets of airborne infantry and armored divisions be consolidated into aviation companies and that an Army Aviation Corps be established. This recommendation, however, was never adopted.²⁰ As the 1940's came to a close, field artillery aerial observation units were the closest thing to what we now call combat aviation.

The 1950's marked a period of significant growth for combat aviation. During this period the helicopter emerged as a useful military vehicle and new concepts and organizations for army aviation were developed. The helicopter demonstrated its usefulness in Korea where over 21,000 casualties were evacuated by helicopter.²¹ In 1952 the Army moved to form 12 helicopter battalions.²² Interest developed in the use of helicopters as armed platforms. In 1954 the first crude experiments in arming helicopters began at Fort Rucker, Alabama. In 1956 an experimental armed helicopter sky cavalry platoon was formed at Fort Rucker. This platoon later became the nucleus of the first approved Aerial Combat Reconnaissance Company in March 1958.²³ By 1959 US divisions were authorized a helicopter company as part

of their organization.

In July 1954, MG James M. Gavin published an article in Harper's Magazine entitled "Cavalry and I Don't Mean Horses." In it he proposed the use of helicopters for cavalry missions. This article represented some of the vision displayed then by aviation enthusiasts. Meanwhile, the Infantry School published FM-57-35, Army Transport Aviation-Combat Operations. Its publication further demonstrated the vision some had for combat aviation. Department of the Army initiated studies of combat aviation concepts in 1958. These studies resulted in a recommendation to add an aerial combat reconnaissance platoon to the divisional cavalry squadrons and an aerial combat reconnaissance company to the armored cavalry regiments. By the close of the 1950's, combat aviation organizations were taking shape.

The next decade witnessed a rapid growth of army aviation. The period was marked by the development and implementation of the airmobile concept and application of the helicopter in a major role in Vietnam. The development of the airmobile concept began formally in 1962. With the creation of the Howze Board (named for its chairman LTG Hamilton H. Howze, Commander XVIII Corps), the Army began investigation, testing, and evaluation of the operational concepts of airmobility. After 40 tests, the board recommended the organization of five air assault divisions, five air transport brigades, and three air cavalry combat brigades.²⁷ Based upon the board's recommendation the 11th Air Assault Division was activated on 15 February 1963 to test the airmobile concept. Under LTG H.O. Kinnard, Commander of the 11th

Air Assault Division, new initiatives in the areas of flight procedures, tactics, techniques and logistics were applied and tested in a major exercise in the Carolinas in 1964. MG C. Rich, commander of the test and evaluation group, discussed in his report three fundamental levels of airmobility, the third level being the air assault division. Of the third level he stated;

"...only at the third level do we find a new potential in the tempo of operations, in range over extended distances and in freedom from heretofore formidable terrain obstacles."28

On 1 July 1965 the 11th Air Assault Division was converted to the 1st Cavalry Division which began deployment to An Khe South Vietnam in August 1965. In June 1968 the 101st Airborne Division was reorganized into an air cavalry division while in Vietnam. As the 1960's came to a close the airmobile concept was in practice with two airmobile divisions in combat in Vietnam. Airmobility had become an extension of ground combat.

The helicopter played a major role in the conflict in Vietnam. On 11 December 1961, the 57th and 8th Transportation Companies consisting of 32 H-21 helicopters and 400 men arrived in South Vietnam marking the beginning of army aviation's role in that region. 29

By 1966, the 1st Aviation Brigade was established in Vietnam commanding six aviation battalions and two aviation groups. 30 Aviation units of the 1st Aviation Brigade provided transport, liaison, reconnaissance and armed helicopter support to four corps and one special forces group. The helicopter was proving to be invaluable to US ground forces.

The use of armed helicopters in Vietnam initially grew out of a requirement to provide armed escort for troop transport

helicopters. Early attempts at arming CH21 and CH34 helicopters proved ineffective.³¹ Using UH-1B model helicopters, armed with machine guns and 2.75 inch rocket launchers, the Army formed a Utility Tactical Transport Helicopter Company and deployed it to Vietnam in mid 1962. These Huey gun ships proved effective in the armed escort role reducing transport helicopter lift hits by 25 percent.³² Later, Huey C and ultimately M models were used exclusively as gun ships mounting an assortment of rockets, machine guns, mini guns, and grenade launchers. The first pure attack helicopter gunship, the AH-1G Huey Cobra, a derivative of the Huey, was deployed to Vietnam in 1967. The Cobra proved extremely effective not only in the escort role but also as a gunship in the air cavalry role.³³ The Cobra proved its worth during the North Vietnamese TET offensive in 1968. According to commander of the security force at Tan Son Nhut Air Base, "the Cobras were the turning point in the enemy's destruction."³⁴ The helicopter played a major role in Vietnam not only as a transporter but also as a weapons platform. By the end of the 1960's, airmobility had been enhanced with firepower.

The 1970's ushered in a change in focus for combat aviation. Events such as Lam Son 719 (a battle in Laos in 1971 considered as the first application of American helicopters in a mid intensity type conflict) and the 1973 Arab Israeli War resulted in development of combat aviation capabilities in mid intensity warfare.³⁵ Throughout the 1970's the Cobra was modified and redesigned as a tank killer armed with anti-tank guided missiles. In 1972, the Army initiated the Redesigned Advanced Attack

Helicopter Project to develop and acquire a replacement for the Cobra. This project resulted in the fielding of the AH64 advanced attack helicopter eleven years later. Another Army reorganization study (ARCSA III), in 1974, developed and evaluated requirements to strengthen the combat posture of combat aviation, particularly attack helicopters. As a result, division aviation companies were expanded to battalion organizations.³⁶ All aviation assets of the division were incorporated into these combat aviation battalions. By the end of the decade, combat aviation had become a substantial combat multiplier on the battlefield.

Within the last five years four significant events have affected combat aviation. They are the incorporation of new advanced helicopters, the publication of AirLand Battle doctrine, the introduction of a new force structure called Army of Excellence(AOE), and the creation of the Aviation Branch. The addition of such helicopters as the UH60(replacement for the Huey) has substantially increased the capabilities of combat aviation. The AH64 and an improved scout helicopter scheduled for fielding in the near future will again increase combat aviation's combat potential. AirLand Battle doctrine embraces a new style of warfare for the US. Army. It places increased emphasis on maneuver, something for which Army Aviation is well suited. Combat aviation organizations have changed dramatically under AOE. As a result, divisional combat aviation assets have been restructured into a brigade size organization. The creation of the Aviation Branch, as a combat arm, has renewed interest in the role played by combat aviation in AirLand Battle and has centralized the development of the "air maneuver arm" of land

warfare.

This short review provides a sketch of how aviation has developed in a relatively short period of time. It also assists in identifying trends and visualizing what the future holds for combat aviation.

Trends and Capabilities The helicopter has steadily evolved as a military vehicle. Early helicopters were maintenance intensive and fragile vehicles. But their ability to maneuver over any type of terrain overshadowed their deficiencies. The application of light, fuel efficient turbine engines and new structural materials have improved helicopter performance capabilities.³⁷ Helicopter payload, speed, and endurance have substantially improved. Sophistication of the helicopter has increased dramatically. With today's avionics and navigational systems helicopters can operate in meteorological conditions³⁸ never considered possible in the past. Helicopter weapons and target acquisition systems have advanced and are substantially more sophisticated than those strapped on helicopters in 1954. Wire and laser guided anti-tank missiles, air to air missiles, day/night acquisition systems and helmet sight systems are just a few of the advancements in helicopter armament. Indications are that helicopter technology and capabilities will continue to improve.

As the combat capability of the helicopter has improved so has the number and size of aviation units increased. In approximately ten years division aviation has grown from a company to a brigade size organization. Corps combat aviation has

grown as well. This reflects the Army belief that combat aviation will have a significant role in future ground battle. In the minds of some futuristic thinkers the exploitation of helicopter mobility and firepower has just begun.³⁹

Since its inception, combat aviation's role has expanded. In Korea, medical evacuation and liaison were aviation's major role. Vietnam resulted in a significant expansion in combat aviation's mission. Combat assaults, reconnaissance, transport, armed escort, and fire support were added to combat aviation's mission. Combat aviation's role today includes all of these and more. Its capabilities are optimized when employed in a combined arms context. Today's combat aviation provides maneuverability to the combined arms team.⁴⁰

The list of future roles for combat aviation is growing. Today the anti-armor and air assault roles are the most significant. Some foresee combat aviation performing in air to air combat and close air support roles. Others see helicopters being used as specialized electronic warfare platforms where speed and mobility would be advantageous.⁴¹ The common agreement, however, is that the role of combat aviation in ground combat, as it has since 1947, will continue to increase.

Today combat aviation, operating on the battlefield within the framework of AirLand Battle, has tremendous potential. General von Senger und Etterlin has compared the emergence of the helicopter as a new means of battlefield mobility with the emergence of mechanized forces in World War II.⁴² He explains that prior to World War II combatants generally operated at the speed of the foot infantrymen, 4km per hour. He calls this the

first tier of mobility. In World War II mechanized forces operating at up to 20 km per hour became the second tier of mobility. He explains German success in World War II as a result of the proper application of the mobility differential between these two tiers of mobility. He now believes that since most substantial armies of today are mechanized, mechanization has become the first tier of mobility and air mechanization possesses the potential for becoming the contemporary second tier of mobility.⁴³ Another way to view this concept is to think of army aviation as a third tier of mobility especially since light infantry has returned as part of our force structure.⁴⁴ In either case, the concept bears merit especially in the context of AirLand Battle. Combat aviation certainly can operate with greater speed and flexibility than mechanized forces given the proper command and control.

After this review it is apparent that combat aviation is a highly mobile and flexible combat asset. It is inherently agile and its future in warfare is bright. How best should it be controlled still remains the question. We turn now to history to see how mobile forces have been commanded and controlled in the past with the hope of gaining some insights that can be applied to the present.

GERMAN PANZER FORCES

Development. Command and control of German mechanized forces has been selected as a historical example for several reasons. First, AirLand Battle command and control, as will become clear,

is in essence auftragstaktik. Second, German mechanized forces, like combat aviation, possessed a mobility differential over other combat forces. Because of this similarity, it will be useful to review how the German's controlled their mechanized forces. Third, the requirements of the blitzkrieg are similar to those for AirLand Battle. Finally, combat aviation's greatest potential for the future rests in influencing the ground dimension of warfare. It is here that combat aviation can apply its inherent capabilities with revolutionary results.

Several factors started Germany on the road to mechanization. First and foremost was the fact that they lost in World War I. Frustrated over their inability to exploit tactical success in World War I, the Germans began looking for new ways to maneuver on the battlefield. The introduction of tanks by the British at Cambrai in 1917 and later at Amiens was a factor that made a significant impression on some of the future leaders of the German Army, particularly Captain Heinz Guderian.⁴⁵ As a result of the war, The Treaty of Versailles restricted the manpower of the German Army.⁴⁶ Thus, as a means of offsetting manpower limitations, the German Army turned to mechanization.

Heinz Guderian played a key role in the development of mechanized forces. In 1927, he began studying motorization of infantry and logistics. In 1931, commanding a test bed motor transport battalion, Guderian experimented with combined arms mechanized formations. Based upon his experiences in World War I he experimented with the use of radios in every tank. In 1934, Guderian demonstrated to Adolf Hitler the capabilities of his mechanized combined arms formations. Hitler was impressed and

directed full scale experimental maneuvers of a panzer division organization. In the summer of 1934, the Panzertruppe (Panzer Command) formed with Guderian as its Chief of Staff.⁴⁷ By 1934, Guderian and Hitler had laid the foundation for the organization of Germany's panzer divisions.

The development of the hardware for mechanization began in the 1920's. Under a treaty signed with the Russians (the Treaty of Rapallo), secret testing of tanks began on Russian soil in 1926.⁴⁸ In 1932, training tanks were constructed on tracked anti-aircraft mounts purchased from England. In the early 1930's the German Army began secretly producing 20mm, 37mm, and 75mm light and medium tanks of their own design (PZII, PZIII and PZIVs).⁴⁹ Overt tank production began under Hitler in 1934. As a result, Germany had the tanks to form its first panzer divisions in 1935.

Tactics and Organization. German mechanized forces and the tactics used to employ them developed simultaneously. World War I "Infiltration tactics" provided the foundation for the development of mechanized tactics.⁵⁰ "Infiltration tactics" involved using infantry "storm troops" to infiltrate the enemy's defenses, bypass points of resistance, and plunge deep into the enemy's rear, disrupting his defense.⁵¹ Surprise, penetration at weak points, exploitation, maximum fire support and maintaining the momentum of the attack were necessary for success of these tactics.⁵² Mechanized tactics, the blitzkrieg, represented a mobile application of these tactics. The blitzkrieg called for an eruption into the enemy's defenses.⁵³ This eruption was accomplished by rapidly establishing local superiority in forces

at a point where the enemy was weak. This point of local superiority was called the schwerpunkt. As the attacking force moved into the depth of the defense the schwerpunkt continued to seek enemy weakness. As the schwerpunkt progressed forward creating a penetration, side thrusts were conducted to widen the gap. These side thrusts were called the aufrollen.⁵⁴ Mechanized forces, supported by ground/attack aircraft, provided the necessary speed, firepower, and flexibility to make the schwerpunkt and aufrollen effective.

The German blitzkrieg was a momentous step in the evolution of modern warfare. The blitzkrieg maximized inherent abilities of mobile forces to mass and maneuver. Though other nations were mechanizing at the same time as the Germans, their tactical employment focused on augmentation of existing infantry organizations. They proved to be less successful at optimizing mechanization's effects until later in the war.

The blitzkrieg took advantage of the ability of mechanized forces to concentrate quickly and to strike hard at unexpected places. The goal of seizing and maintaining the initiative was fundamental to the blitzkrieg. The Germans used mechanized forces to out-maneuver the enemy and keep him off balance. After effecting a breakthrough in the enemy's positions the inherent mobility of mechanized forces allowed the continuation of the attack deep into the enemy's rear. This disrupted the enemy's lines of communications, disorganized his control, and ultimately brought about the destruction of his forces. Agile, mobile forces, following the principles of concentration, depth, and initiative, were fundamental to the German mechanized tactics

called the blitzkrieg.

Germany's mechanized forces were organized differently than other countries'. The Germans concentrated their mechanized forces into completely mobile divisions.⁵⁵ The panzer divisions, formed in 1935, consisted of a 240 tank armored brigade, a 3000 man mechanized infantry brigade, an artillery regiment, a reconnaissance battalion, a signal battalion and an engineer company.⁵⁶ It was not a perfect organization, since it lacked the proper mix of infantry and armor. It was, however, a mobile combined arms force.

Tested in combat, German mechanized divisions continued to change.⁵⁷ Experiences in Spain were somewhat disappointing. Military action in the Austrian Anschluss in 1938 provided another chance to test organization, equipment, and tactics. The Anschluss highlighted the need for better logistics. As a result, additional motor transport was added to the division's organization.⁵⁸ Experiences in Poland resulted in additional refinements. Replacement of early model tanks was accelerated due to their poor maintenance availability. Half tracks designed for artillery proved effective as infantry carriers and were added to the infantry brigade. The Polish experience highlighted the imbalance between infantry and armor. The Germans responded by establishing a more balanced organization of generally three infantry, three armor, and three artillery battalions per division. This trend toward balanced formations continued throughout the war.⁵⁹ By 1940, on the eve of the invasion of France, the Germans had 14 mechanized divisions (10 panzer and 4

motorized infantry) which were substantially better organized than any other nation's mechanized forces.

The introduction of mechanized organizations revolutionized warfare as known up until 1939. As General von Senger und Etterlin has stated, it brought a new tier of mobility to the battlefield. Through the tactics of blitzkrieg the Germans maximized the use of mobile forces to conduct a maneuver style of warfare which was revolutionary in its own right. Next we must see how these mobile forces were controlled for insight into what is required for control of today's mobile forces.

German command and control. John English, in his book On Infantry, stated: "With the wedding of mechanization and motorization to the concepts of schwerpunkt, aufrollen and auftragstaktik the technique of blitzkrieg was formulated." ⁶⁰

Auftragstaktik, or mission tactics, was the command and control system which supported the application of Germany's new tactical mobility. The Germans have practiced auftragstaktik for over a century. Its origins can be traced to the Hessians returning from ⁶¹ the American Revolutionary War.

In the 1866 war between Austria and Germany, auftragstaktik made it the responsibility of every German soldier to do without hesitation what the situation called ⁶² for.

In World War I, as the complexity of the battlefield increased, the independence and initiative of subordinates to ⁶³ make decisions on their own remained fundamental. Later the

1921 German field service regulation stated: "Subordinate commanders should not be deprived of initiative in the ⁶⁴ independent execution of their missions." Even since World War II the concept of auftragstaktik has been the unquestioned

process by which the Germans effect command and control of their
forces.⁶⁵

Mission type orders, commander's intent, initiative, unity of thinking, and confidence in subordinates are all major characteristics of auftragstaktik.⁶⁶ Under this command and control style, orders are given as missions for the subordinate to execute within the context of the commander's will. The commander's intentions dictate the degree of latitude which the subordinate has in executing the mission. The goal, therefore, must be expressed clearly. The subordinate must think as the commander thinks and act as the commander would act in situations where explicit guidance does not fit the situation or cannot be obtained. Armed with the commander's mission order and a full understanding of the commander's intentions, the subordinate executes with initiative and with the commander's complete confidence. The commander provides the subordinate with as much freedom of action as possible allowing him self-reliant execution of the mission. These characteristics are essential to the exercise of auftragstaktik as a form of command and control.⁶⁷

In order to implement auftragstaktik a common doctrine is an obvious necessity. Doctrine, tactics, and techniques must be intuitively understood. The Germans established a common doctrine with the publication of their 1921 German field service regulation, Command and Combat of the Combined Arms. This sound, futuristic doctrine remained the basis of German tactics until 1939.⁶⁸ For over twenty years German officers and NCO's were trained in its basic principles. Within its fundamental tenets,

the foundations of the blitzkrieg could be found. Because of this well established doctrine, the German army developed into a highly professional, well educated force.

Auftragstaktik required both commanders and subordinates to know their equipment, soldiers, and unit. This required training. Commanders had to be trained to develop an appreciation for all aspects of the battlefield. Subordinates had to be efficient and capable of tactical decision making. During the interwar years the German army was forced to abolish its General Staff. However, it remained in existence under the guise of the German Truppenamt (troop office) and covertly continued to provide a form of military education.⁶⁹ Many middle and senior ranking officers received training in the Truppenamt. In the interwar years junior officer training was extensive. Because of the small size of the Army, competition for commissions was keen. It took four years of training for a potential officer to qualify as an officer candidate. Training included service in a unit as an enlisted soldier and extensive training in combat arms.⁷⁰ This system produced junior officers who were well trained in doctrine and tactics as well as technically proficient in their arm of service. Especially at the tactical level, German commanders and subordinates were both tactically and technically proficient.

Auftragstaktik required commanders to issue mission type orders and allow subordinates to exercise initiative. The Germans practiced this style of command in peace time. Even so, when applied in combat it took time to develop.

Guderian, while commanding the XIX Panzer Corps in Poland, found his whole corps stopped at the Braha river because the

regimental commander on the scene felt that the river was too heavily defended to force a crossing. Together with a tank commander, Guderian found an alternate crossing site and pushed the regiment across.⁷¹ This example, though not the norm, was indicative of problems experienced developing initiative and independent action. The Germans would later improve.

This style of command worked much more efficiently in France. In 1940 the Germans put initiative and independent action to good use.

During the attack into France on 13 May 1940, elements of Guderian's 10th and 1st Panzer Divisions arrived at the Meuse River near Sedan. With little pause the infantry regiments of the two divisions attacked across the river supported by Stuka dive bombers. By 1930 hours, the rifle regiments had completed their river crossings and controlled the high ground overlooking the crossing sites. Without specific instructions nor tank support, Lieutenant Colonel Balck, commander of 1st Rifle Regiment, continued his attack, expanding the bridgehead three to four miles to the village of Chehery. This expansion provided needed maneuver room for the following tank brigades. By 0600, 14 May, a brigade of tanks was across the river and following Balck's infantry. The French attacked the bridgehead at 0700. Within two hours 1st Panzer Division counterattacked the French and set them into retreat. Guderian's forces now had the initiative and were never denied it as they drove to the English Channel.⁷²

Balck's actions were indicative of the initiative and independent action of auftragstaktik. The crossing of the Meuse

had been rehearsed intensively prior to the German attack; therefore, Balck and others were well aware of what had to be accomplished. Balck was aware of his division and corps commander's intent and the overall purpose of his unit's operation. Had he not expanded the bridgehead, the French armor attack may have had much greater success. Guderian kept abreast of Balck's and 1st Panzer Division's actions through personal observation. He was in one of the first few assault boats across the Meuse. He moved continuously about the battlefield. By doing so he was able to orchestrate the actions of his divisions as they continued the attack. Balck's decision to continue without specific instructions was in keeping with the concept of the initiative at the schwerpunkt and auftragstaktik.

Auftragstaktik implies a degree of control which is designed to maximize the agility of the force. Control measures must allow for freedom of action on the part of subordinates and be used only to coordinate the actions of the force. Rommel's attack across the Meuse is a good example of the auftragstaktik style of control. Rommel's 25th Panzer Division reached the Meuse north of the Ardennes on 12 May and forced a crossing. At 0430, 13 May, the attack was resumed towards the towns of Flavion and Philippeville.⁷³ With the 25 Panzer Regiment leading the attack, Rommel issued general guidance. He identified a "line of thrust" to his commanders, G3, and artillery commander which each marked on their maps. This became the only control measure necessary for the attack. The regiments operated within the framework of the line of thrust and were able to do so under their own initiative. This procedure simplified communications between artillery and

maneuver forces since the line of thrust provided a common reference. The attack of the 25th Division was so successful that Rommel soon outran the rest of the Corps. About this specific operation Rommel wrote;

"The officers of a panzer division must learn to think and act independently; within the general framework of the general plan and not wait until they receive orders."74

Rommel's application of auftragstaktik went well beyond just the use of a line of thrust. He used face to face communications with his regimental and battalion commanders to convey his intent. He led from the front, where he could keep abreast of the situation and intercede when needed. Each morning and afternoon he met with his staff for a detailed exchange of views on the conduct of the operation. This facilitated coordination, especially during times when communications between Rommel and his staff were interrupted. In fast moving operations Rommel permitted his staff to make decisions in his absence in accordance with his intent. This greatly reduced the need for constant communications. Finally, Rommel organized his headquarters into a forward and rear echelon. Forward with him, he established a tactical command post consisting of some signal troops and a small combat team. This allowed him to move with the front elements of the division. In the rear echelon he established his command post. There the chief of staff and division operations staff supported the battle, maintained contact with higher headquarters, and planned for future operations.⁷⁵

Communications are as important to auftragstaktik as to other

forms of command and control. However, auftragstaktik depends less on electronic communications by its nature. Under auftragstaktik tactical leaders position themselves forward where they can first see the battle and second communicate directly with their subordinates. Face to face communication is desirable and facilitates the conveyance of the commander's intent. The commander's intent and written orders are used to orchestrate the battle by providing coordinating information and mission type orders. Electronic communications such as radios are used to enhance auftragstaktik particularly in mobile forces.

The Germans used vehicle mounted radios extensively. Guderian, based on his experience as a signal officer in World War I, championed the use of radios in mechanized forces. Each German tank was equipped with a simple, reliable, easy to change radio. System ranges were tailored to the level of command. Battalion nets had a range of about eight kilometers and division systems ranged to 300 kilometers.⁷⁶ These radios enhanced the agility of the panzer forces. Their reliability, however, was less than desirable. They habitually failed at night and could not be relied upon under all conditions.

Continuous electronic communications were the exception rather than the rule. Commanders often were out of contact with their staffs. Rommel's practice of daily meetings with his staff, coupled with the authority he provided them, were indicative of how auftragstaktik functioned even without constant communications.

Having looked at the development of the second tier of mobility, the tactics used to implement it and some examples of the command and control process used to execute it, some

implications of auftragstaktik for mechanized forces can be deduced.

Implications of Auftragstaktik. Auftragstaktik has several implications in the area of training. It requires an effective military education system which produces tactically and technically proficient leaders and subordinates. This education system must insure that doctrine, tactics, and techniques are common knowledge to all. Training based on doctrine, must continue in each tactical unit. Procedures must be established so that actions occur with little guidance or direction. Maneuver formations and immediate action drills must be rehearsed and become automatic. Finally, both the educational system and unit training must develop initiative and independent thinking to the lowest level. This can only be developed through an education system which promotes initiative and frowns upon indecisiveness.

Communications should take place in person whenever possible. Electronic methods of communications must be simple and reliable. They should be designed to maximize the inherent capability of mobile forces to maneuver with speed and flexibility upon the battlefield. However, mechanized forces must be capable of operating without total reliance on electronic means of communications .

Auftragstaktik implies that forces must be organized combined arms to the lowest possible level. Combined arms organization allows the subordinate to operate independently without having to rely upon a higher commander for support. Logistics should be integrated into the units to the lowest possible level. The more

self-sufficient a unit , the more independent the unit becomes. Logistical support should be as mobile as the supported unit. It must be thoroughly planned in advance of the operation. It, like communications, must maximize the capability of mobile forces to maneuver on the battlefield. Finally, units should be organized with organic reconnaissance forces capable of providing intelligence and security for the force. This facilitates independent action without reliance on a higher commander for intelligence information. These reconnaissance forces must be even more mobile than the force they support.

The implications of auftragstaktik for the commander are substantial. First, he must develop a clear vision of what it is that he wishes his unit to accomplish and then clearly convey this vision to his subordinates. This dictates that the commander be deeply involved in the planning of the mission. Second, auftragstaktik implies that the commander rely upon his subordinates to accomplish his will. He must, therefore, delegate the authority necessary to his subordinates for them to execute . Finally, at the tactical level, given the state of communications and battlefield intelligence, he must lead from the front.

Auftragstaktik implies that control is applied as an exception rather than as a rule. Decision making must be a decentralized process permitting subordinates the freedom to act independently and with initiative. Orders and directives must be as general as possible and specific only when it is necessary to orchestrate the actions of two or more elements. Planning is detailed to facilitate quick action. Since the commander is

forward he must restrain himself from the temptation of over directing the actions of his subordinates except to insure that his intent is achieved. In summation, control should be minimized.

UPDATING THE IMPLICATIONS OF AUFTRAGSTAKTIK

It would be too simplistic to assume at this point that the implications of command and control would be exactly the same for combat aviation today as for panzer leaders in 1940. A number of factors have changed since 1940 which must be reviewed to determine if the implications are still valid.

Change Affecting the Battlefield. Since 1940, weapons systems have improved in lethality, accuracy, and reliability. Today US armored and mechanized divisions have five times the firepower and mobility of armored divisions of the 1950's.⁷⁷ Ground and air launched guided antitank weapons have extended the accuracy and range of tank defeating systems three-fold. Tank and indirect fire weapons systems' lethality, ranges, and accuracy have increased significantly. Ground attack aircraft capabilities have increased over the last four decades due to precision guided missiles, tank defeating cannon, and smart bombs. Air defense systems have improved especially in acquisition and guidance systems. Finally, the introduction and continued development of atomic weapons have dynamically increased the lethality of the battlefield.

The increased lethality of the battlefield has resulted in a dispersing effect. Forces are separated by greater distances due to greater weapon ranges and nuclear weapon effects. Logistics

requirements are greater. Today's weapons systems consume more ammunition. Most weapons systems are technologically complex requiring more maintenance or special handling. Weapons systems are in many cases much more complex than four decades ago requiring more training for both the operator and the maintainer. Dispersion, logistics, and training all impact on the nature of command and control.

Communication technology and capabilities have also changed since 1940. Today at the tactical level electronic communications have greater range and reliability and are certainly more widely used than in the German panzer division. Encoding equipment and various means of signal modulation provide today's users with communications security. Communication has expanded beyond mere voice to teletype and facsimile. Computers now being integrated into tactical communications networks promise to provide enhanced capabilities in receiving, sending, and processing information.

Paralleling the growth in electronic communication has been the growth of electronic warfare. Communications intelligence, signal intelligence, electronic intelligence, and electronic counter measure capabilities have proliferated as fast as electronic communications. Because of these, communications has become a two edged sword.

Technological developments in communications have significantly changed the ability of a commander to communicate with his subordinates. German radio communications were extremely unreliable at night. Today radio communications are more reliable, yet susceptible to electronic warfare. Communications

have become more prolific and vulnerable.

Today one US armored division equipped with M1 tanks is expected to use more than twice as much fuel in one day as Patton's entire 3rd Army. Combat aviation units use significant amounts of supplies. In order for any force today to fight⁷⁸ effectively, it must consume large stocks of military supplies. The dispersed nature of today's battlefield will require supplies to be transported over greater distances than envisioned in 1940. In order for combat service support to sustain a modern combat force it must be flexible, responsive, and innovative. The demands of logistical sustainment have more implications today for command and control than in 1940. Effective communications between combat service support and maneuver units are necessary⁷⁹ in order to coordinate support activities.

The German Army organized and prepared for a war with its neighbors on the European continent. Today war is more complex and its tempo greater. The US must prepare to fight across the spectrum of warfare from low to high intensity in different environments and parts of the world against a threat that is equally well prepared. Modern warfare and the global range of US interests require the army to depend more on air and naval⁸⁰ forces. This adds to the complexity of current warfare. The potential introduction of nuclear, chemical, and biological weapons complicates further the nature of today's battlefield. The synergistic effect of all these factors substantially increases the complexity of war for the US Army over that experienced by the Germans in 1940.

Impact of Change. Looking now at the requirements of

auftragstaktik, after having seen what has changed since World War II, we can place them in proper perspective. What is the impact of all of these factors on the implications of auftragstaktik? The answer, at the tactical level, is that the implications are more valid today than in 1940.

Leaders and subordinates must be better trained and more competent than ever before. The margin for error has decreased. The sophistication of the battlefield demands a military education program which produces technically proficient officers and NCO'S. The requirement for initiative at the tactical level is far greater given the current threat and faster tempo of warfare. Subordinates must be trained to recognize and take advantage of opportunities which will present themselves rapidly. The faster tempo and complexity of the battlefield, coupled with a more sophisticated threat, demand highly proficient leaders and subordinates who take the initiative.

The requirement for well organized, self sustainable organizations is even greater today. To defeat a sophisticated threat all available combat power assets must be synchronized to achieve their maximum potential. Units must be combined arms organizations. The increased importance of logistics for success coupled with the dispersive nature of today's battlefield indicates that logistics must be decentralized to respond to the demands of the battlefield. Initiative must be practiced by combat service support elements and continuous detailed logistics planning must be the norm to satisfy the logistical requirements of today's weapons systems.

Though electronic communications have evolved substantially in four decades, their vulnerability to counter measures impacts on command and control similarly as their unreliability did in 1940. Command and control must not rely on electronic communications any more today than when the Germans marched across France. Communications, to enhance the subordinate's ability to function independently rather than dependently, should be the goal for command and control today.

The battlefield provides the commander with so much ambiguous information that, without a clear vision of intent, the commander will become a slave to the operation, reacting to the ambiguity, losing his focus and will. The conditions of war today attempt to undermine his will. The commander's conveyance of his intent is much more important today. Delegation of his authority is critical to success on today's dynamic battlefield.

Control presents the greatest dilemma to today's command and control system. On one hand, the complex nature of the battlefield begs for decentralized execution. The practice of centralized control can not effectively take advantage of the agility of current forces to respond to opportunities. On the other hand, logistical demands and the necessity of synchronizing the effects of combat and combat support in time and space leads to centralized control as a precursor to success. To reduce this control dilemma, decentralized decision making, a clear commander's intent, and detailed prior planning must be used collectively to satisfy the requirements of the battle and maximize the inherent agility of the force.

CONCLUSIONS

The implications of AirLand Battle's concept of command and control for combat aviation are similar to the implications of auftragstaktik for German mechanized forces in 1940. The reasons for this are clear. First, combat aviation brings a new tier of mobility to the battlefield just as German mechanized forces did almost half a century ago. Properly employed, combat aviation possesses the potential to again revolutionize the ground battle. Next, AirLand Battle and the blitzkrieg both demand initiative, agility, depth, and synchronization. Combat aviation is as well suited for AirLand Battle as panzer forces were for blitzkrieg. Finally, auftragstaktik and AirLand Battle's concept for command and control are one in the same. Each includes mission orders, commander's intent, initiative, and independent action as their principles.

From this review several implications have surfaced for combat aviation to implement AirLand Battle's concept of command and control. For simplicity let us cover them under the general headings of training, organization, command, control, and communications.

Training. AirLand Battle's philosophy for command and control requires that combat aviation's military education system accomplish three things. First, it must establish and infuse a common doctrinal understanding in its aviation officers and warrant officers. Combat aviators must share a common view of the battlefield with other combat arms. This can be accomplished through a common understanding of doctrine. Second, the education system must produce officers and warrant officers who are

tactically proficient. Without tactically proficient subordinates, commanders can never establish any degree of certainty as to the actions of their subordinates. Finally, given the technological demands of combat aviation, the education system must produce pilots and junior leaders who understand their aircraft and equipment.

There are implications for individual and unit training as well. Individual and unit training must foster initiative and independent action. If initiative is not practiced in the unit in peacetime, it is doubtful that it will occur in battle. Unit training must emphasize combined arms. Prior to branch implementation, unit emphasis on combined arms training was not as important as it is today. Before the establishment of aviation as a primary occupational specialty, aviation officers attended armor, infantry, field artillery, and other combat and combat support arms courses and served in ground assignments. Thus, combat aviation units were enriched with officers that were educated in a number of combat arms. As a result of branch implementation, aviation officers attend Aviation Branch officer courses and do not serve in ground units. Unit training, therefore, must emphasize combined arms training more than ever before. Combat aviators must know how their sister arms think and act to facilitate synchronization on the battlefield. Unit training must develop and practice standard procedures and drills. Tactical procedures must receive greater emphasis in individual aviation training. Collective training must focus on battle drills to the point where combat aviation platoons and

companies can execute tactical missions with little communication. By doing so, predictable action on the battlefield will occur without excessive control.

Organization. AirLand Battle's concept of command and control implies that combat aviation organizations should be structured to maximize agility while at the same time facilitating synchronization. This can only be accomplished through self sufficiency to the lowest possible organizational level. Given combat aviation's dependence on logistics, logistics must be decentralized. This leads to the observation that perhaps existing combat aviation battalions, attack battalions, and cavalry squadrons are not self sustaining enough. These organizations must possess the capability to operate semi-independently of their parent brigade to exploit the agility they possess. For the CAB to function as a maneuver force it too must have dedicated logistical support. Currently the CAB, along with the rest of the division troops, is supported by the Division's Main Support Battalion. Like the maneuver brigades, the CAB needs its own forward support battalion composed of logistical assets tailored to support the Brigade. Given the ability to control its own logistics, the CAB can operate as a significant maneuver force capable of independent action.

Combat aviation organizations must also be tailorable to facilitate integration with other combat and combat support elements. Aviation battalions must be organized, equipped, and staffed to allow their attachment to other maneuver brigades. They must possess the capability to function as a combined arms battalion task force. The current AOE aviation battalion staff

structure facilitates this. The CAB also must be organized and staffed to accept ground maneuver battalions. This too is facilitated by the AOE CAB staff structure. Currently the AOE structure does not provide the division with enough field artillery battalions to allocate one to the CAB and one to the other three maneuver brigades. For the CAB to operate as a maneuver force it will need field artillery support from division or corps.

Command. AirLand Battle command and control demands that combat aviation commanders understand the importance of the commander's intent. Commander's intent is more essential and also more complicated for combat aviation than perhaps for any other combat arm. As an example, an attack helicopter company commander must know the intent of his battalion and brigade commander. In addition, he must understand the intent of the ground brigade commander in whose area he may be operating and perhaps even the division commander's intent. All of these commanders' intents formulate the parameters in which the attack company commander executes his mission. The commander's intent is essential to the employment of combat aviation.

Initiative and decentralized decision making must be fundamental to combat aviation's command and control process. It is through these two tenets that aviation's inherent agility can be maximized. To facilitate these, aviation commanders must know their subordinates. This can be developed through habitual association and training. Finally, combat aviation commanders must learn to deal with some degree of uncertainty, a by-product

of this style of command and control. Commanders must resist the urge in training to over control.

Control. Control must facilitate synchronization while allowing agility. Combat aviation must seek to establish control procedures which provide subordinates latitude to operate. Orders should be mission type providing what to accomplish, not how to do it. The commander's intent should be the vehicle by which control is established.

When determining the implications for control, the threat must be considered. Extensive control systems and procedures offer the enemy a lucrative target. As control procedures are established, the capability of the threat to attack those procedures is a determining factor in their implementation. Combat aviation must seek to establish control procedures that are safe from enemy interruption either through redundancy or security. Battle drills and standard procedures within the battalion and brigade can reduce the need for control.

Communication. At the tactical level, combat aviation relies on the radio as the primary means of communication. Simple, effective radio procedures should be established to reduce transmission times. Electronic communications should be designed to enhance the agility of the force. However, given threat capabilities, electronic communications should be used prudently. Like German panzer forces, combat aviation must maintain alternate means of conveyance. Combat aviation command and control must not rely strictly upon radios to operate. Combat aviation should instead use the commander's intent, effective plans and a variety of communications means to command and

control its assets. Face to face communications are the best way to transmit the commander's intent. Face to face communications should be maximized whenever possible.

Using these five categories many of the implications of AirLand Battle's concept for command and control for combat aviation have been addressed. Clearly, command and control plays an important part on the AirLand battlefield. Combat aviation must adopt and practice AirLand Battle's concept for command and control in order to maximize its potential as the third tier of mobility on the modern battlefield.

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